REMARKS

The present response is intended to be fully responsive to all points of objection and/or rejection raised by the Examiner and is believed to place the application in condition for allowance. Favorable reconsideration and allowance of the application is respectfully requested.

Applicants assert that the present invention is new, non-obvious and useful. Prompt consideration and allowance of the claims is respectfully requested.

Status of Claims

Claims **1, 5-18, 21-32, 36** and **38-40** are pending.

Claims **1, 5-18, 21-32, 36** and **38-40** have been rejected.

Claims **1, 17,** and **30** have been amended in this submission. Applicants respectfully assert that the amendments to the claims add no new matter. It will be noted that these amended elements do not add new matter and do not require further search, as they are inserted from previously pending claims, now cancelled.

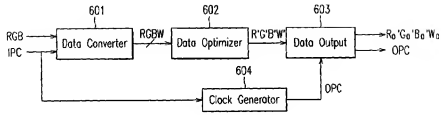
CLAIM REJECTIONS

35 U.S.C. § 102 Rejections

In the Office Action, the Examiner rejected claims 1, 10, 11, 13-18, 26-30, 32, 36 and 38-40 under 35 U.S.C. § 102(e), as being anticipated by Lee (US Patent No. 7,365,722). With respect to the remaining claims, Applicants respectfully traverse the rejection for at least the below reasons.

The Lee reference has been discussed at length in a prior submission and will only be discussed briefly herein. The Examiner pointed to image signal modifier 610 as the conversion module, data converter 601 as the first converter, and data optimizer 602 as the second converter.

FIG.7



Data converter 601 "convert[s] three-color image signals R, G and B into four-color image signals R, G, B and W." Data optimizer 602 "optimiz[es] the four-color image signals R, G, B and W." Data output unit 603 outputs the optimized image signals R', G', B' and W'. (Lee, col. 11, lines 40-43).

First, it is submitted that data optimizer 602 does not satisfy every element of claim 1 with respect to the second converter. In particular, claim 1 as amended recites "a second converter for converting based on a position of each said sub-pixel element independently said intermediate sub-pixel data into said converted sub-pixel data. . ."

Regarding the data optimizer, the Examiner pointed to col. 10, lines 32-38 and lines 59-65, and col. 11 lines 42-43, reproduced below:

> The signal controller 600 is supplied with three-color image signals R, G and B and input control signals controlling the display thereof such as a vertical synchronization signal Vsync, a horizontal synchronization signal Hsync, a main clock MCLK, and a data enable signal DE, from an external graphic controller (not shown). The image signal modifier 610 of the signal controller 610 converts the three-color image signals R, G and B into four-color image signals and processes and modifies the four-color image signals suitable for the operation of the panel assembly 300 on the basis of the input control signals and the input image signals R, G and B. (Lee, col. 10, lines 28-39, emphasis added).
>
> * * *
>
> The data driver 500 receives a packet of the image data Ro', Go', Bo' and Wo' for a pixel row from the signal controller 600 and converts the image data Ro', Go', Bo' and Wo' into the analog data voltages selected

> from the gray voltages supplied from the gray voltage generator 800 in response to the data control signals CONT2 from the signal controller 600. (Lee, col. 10, lines 59-65).
>
> * * *
>
> An image signal modifier according to an embodiment of the present invention includes a data converter 601 for converting three-color image signals R, G and B into four-color image signals R, G, B and W, a data optimizer 602 for optimizing the four-color image signals R, G, B and W, a data output unit 603 for outputting the optimized image signals R', G', B' and W' in synchronization with a clock OPC, and a clock generator for generating the clock OPC. The output image signals from the data output unit 603 are denoted as Ro', Go', Bo' and Wo'. (Lee, col. 11, lines 38-48, emphasis added).

Nowhere in this portion (or elsewhere) does the Lee reference disclose that the data optimization of data optimizer 602 converts intermediate sub-pixel data into converted sub-pixel data based on a position of each said sub-pixel element independently, as recited in claim 1.

As disclosed in the specification of the present application:

> [0080] A variation of the brightness values of each of the primaries across the display may be determined, e.g., during a testing process, and based on the brightness variation, a set of position-dependent homogeneity correction factors corresponding to each of the primary colors may be calculated. For example, each of the homogeneity correction factors may correspond to one of the primaries and a position on the display. Data representing the position-dependent homogeneity correction factors corresponding to each of the primary colors may be stored, for example, in memory 314. The homogeneity correction factor data may be subsequently used in order to correct a brightness variation across the display, as described below. According to other embodiments of the invention, the brightness variation may be determined using any other method, e.g., during operation of the display device. (emphasis added)
>
> * * *
>
> [0084] According to exemplary embodiments of the invention, controller 312 may determine, e.g., based on one or more of signals 324, a position of a pixel of the display intended to reproduce the pixel data of signals 603, e.g., as described above with reference to FIG. 4. Controller 312 may then retrieve from memory 314 a set of, e.g., n, homogeneity correction factors corresponding to the determined pixel

> position, and provide module 700 with a set of, e.g., n, signals 704 having the value of the retrieved set of, e.g., n, correction factors, respectively. (emphasis added)

The data optimizer 602 does not optimize data as recited in claim 1 because the optimization is not position-dependent.

Second, Applicants continue to maintain arguments presented in the prior response to Office action, including that signal controller 600 does not satisfy every element of claim 1 with respect to the controller. Claim 1 recites that the controller is "to control said conversion module to convert said image data into said converted sub-pixel data based on said one or more display-attributes and said one or more image-attributes." This relationship between the controller and the conversion module is shown generally in the structure of Fig. 3 of the present application:

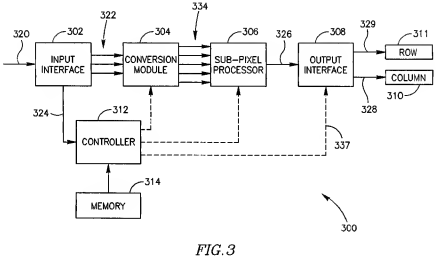


FIG. 3

As described in the specification of the present application,

> [0048] According to exemplary embodiments of the invention, module 300 may further include a controller 312 to control conversion module 304, sub-pixel processing module 306 and/or output interface 308, e.g., based on values of one or more of signals 324 and/or at least one of the display attributes and/or image attributes, as described below. . . (emphasis added).

It will be noted that the controller provides a control input (dashed arrow underneath sub-pixel processor 306) to the second converter separate and distinct from the intermediate sub-pixel data 334. Specific examples of the controller controlling the second converter may be found throughout the application. For example, Fig. 9 illustrates one implementation of the controller:

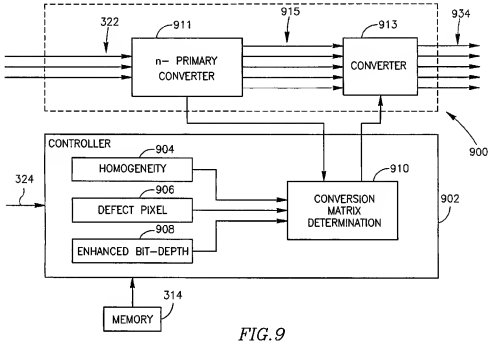


FIG. 9

In the above figure, controller 902 has a very specific control relationship to second converter 913:

> [0100] Module 900 may also include a second converter 913 able to convert the intermediate sub-pixel data of signals 915 into converted sub-pixel data signals 934. According to some exemplary embodiments of the invention, converter 913 may be able to perform a matrix multiplication of the intermediate sub-pixel data of signals 915 with a conversion matrix, denoted M. According to exemplary embodiments of the invention, one or more values of the conversion matrix M may be determined by a controller 902, e.g., based on signals 324, and/or one or more of the display attributes and image attributes, as described below.
>
> [0101] According to some exemplary embodiments of the invention, controller 902 may include a homogeneity-correction module 904, a

> defect pixel correction module 906, an enhanced bit-depth module 908, and a matrix determination module 910. Modules 904, 906 and/or 908 may be implemented using any suitable hardware, software or combination thereof.

Again, the controller 910 provides control input to the second converter 913 separate and distinct from the intermediate sub-pixel data 915. Thus, the controller may vary the actual conversion parameters upon which second controller converts intermediate sub-pixel data into converted sub-pixel data.

However, in the Lee reference, signal controller 600 does no such thing with respect to data optimizer 602. The only input to data optimizer 602 that is shown (e.g., in Fig. 7) or described is the RGBW data. The Examiner pointed to col. 10 lines 23-45, part of which was reproduced above. Applicants have carefully reviewed this portion of the Lee reference, and have found no mention of the controller 600 controlling data optimizer 602 to convert said image data into said converted sub-pixel data based on said one or more display-attributes and said one or more image-attributes, as recited in claim 1.

In contrast, for example, claim 1 recites that the controller is "to control said conversion module to convert said image data into said converted sub-pixel data based on said one or more display-attributes and said one or more image-attributes, wherein said controller is able to determine one or more values of said at least one conversion matrix based on at least one display attribute and at least one image attribute, and to provide said values of said at least one conversion matrix to said second converter."

Accordingly, claims 1, 10, 11, 13-18, 26-30, 32, 36 and 38-40 are allowable over the Lee reference.

Applicants further wish to point out certain dependent claims that recite claim elements that are independently allowable over the Lee reference.

As mentioned above, the display-attributes may be attributes of the particular display device, rather than merely features of all such displays. Accordingly, claim 13 recites that "said one or more display-attributes comprise at least one attribute selected from the group consisting of a configuration of one or more defective sub-pixel elements within said array, a

brightness non-homogeneity of said display device, and a color non-homogeneity of said display device." The Examiner has pointed to Lee, col. 6 lines 19-23, reproduced below.

> Although the sequence of the pixels in a pixel row can be altered, it is preferable that the green pixels GP are far from the white pixels WP since the white pixels WP and the green pixels GP has transmittance higher than the red pixels RP and the blue pixels BP.

However, this portion does not relate to the display attributes, or to a controller determining values of a conversion matrix based on such display attributes, or a second converter converting intermediate sub-pixel data into converted sub-pixel data based on such conversion matrix. Lee certainly does not disclose a device-specific display attribute selected from "a configuration of one or more defective sub-pixel elements within said array, a brightness non-homogeneity of said display device, and a color non-homogeneity of said display device," as recited in claim 13.

Accordingly, claim 13 is allowable over the Lee reference. Claims 28 and 38 are allowable for similar reasons.

The image-attributes may be attributes of the particular image being displayed, rather than merely features of any image. Claim 14 recites that "said one or more image-attributes comprise one or more attributes selected from the group consisting of a perceived bit-depth of pixels of at least part of said image, a viewed smoothness of at least part of said image, a brightness uniformity of at least part of said image, a color uniformity of at least part of said image, and a rendering scheme to be applied to at least part of said image." The Examiner has pointed to the same portion of the Lee reference as called out above with respect to claim 13.

It is unclear how the attributes described in the same paragraph are both display attributes and image attributes. In any event, this portion of the Lee reference certainly does not relate to image attributes, or to a controller determining values of a conversion matrix based on such image attributes, or a second converter converting intermediate sub-pixel data into converted sub-pixel data based on such conversion matrix. Lee does not disclose an image-specific image attribute selected from "a perceived bit-depth of pixels of at least part

of said image, a viewed smoothness of at least part of said image, a brightness uniformity of at least part of said image, a color uniformity of at least part of said image, and a rendering scheme to be applied to at least part of said image," as recited in claim 14.

Accordingly, claim 14 is allowable over the Lee reference. Claims 29 and 39 are allowable for similar reasons.

35 U.S.C. § 103 Rejections

In the Office Action, the Examiner rejected claims 6, 7, 12, 22, and 23 under 35 U.S.C. § 103(a), as being unpatentable over Lee (US Patent No. 7,365,722) in view of Kumada et al. (US Patent No. 5,563,725).

In the Office Action, the Examiner rejected claims 9 and 25 under 35 U.S.C. § 103(a), as being unpatentable over Lee (US Patent No. 7,365,722) in view of Inoue (US Patent No. 5,896,178).

Neither of the Kumada and Inoue references rectify the deficiencies of the Lee reference, discussed hereinabove. Accordingly, the rejected dependent claims are allowable, at least for depending from allowable base claims.

In view of the foregoing amendments and remarks, Applicants assert that the pending claims are allowable. Their favorable reconsideration and allowance is respectfully requested.

Should the Examiner have any question or comment as to the form, content or entry of this Amendment, the Examiner is requested to contact the undersigned at the telephone number below. Similarly, if there are any further issues yet to be resolved to advance the prosecution of this application to issue, the Examiner is requested to telephone the undersigned counsel.

Please charge any fees associated with this paper to deposit account No. 50-3355.

Respectfully submitted,

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